

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the matter of	)	
	)	
Implementation of Sections 309(j) and 337	)	WT Docket No. 99-87
Of the Communications Act of 1934, as Amended	)	
	)	
Promotion of Spectrum Efficient	)	RM-9332
Technologies on Certain Part 90	)	
Frequencies	)	

**PETITION TO DELAY IMPLEMENTATION OF SECTION 90.203(j)(5)  
OF THE COMMISSION’S RULES**

Ritron, Inc., Carmel, IN (Ritron), a manufacturer of wireless products, hereby requests that the Commission delay the implementation of Section 90.203(j)(5) of the Commission’s rules. This section requires that after January, 2005, all new equipment authorizations for devices in the 150-174 MHz and 421-512 MHz bands support 6.25 kHz operation. Ritron’s request is based upon the following:

**Using the Equipment Authorization Process to Facilitate Refarming Has Been Largely Unsuccessful**

In 1991, in order to reduce congestion in the private land mobile radio (PLMR) bands below 800 MHz, the Commission instituted their refarming plan. With time, this plan was expected to create more spectrum space by moving to increasingly narrower bandwidth technologies. This in turn would allow more users in the same amount of spectrum space. To effect this changeover, the Commission, through the equipment authorization process, began to require that narrow band technology be included in the product being certified. The first phase, which took place in 1996, required that new equipment authorizations include data to support operation on 12.5 kHz channels including meeting the appropriate emissions mask. The next phase, to take place in January, 2005, will require data on 6.25 kHz channel operation with a corresponding 6.25 kHz emissions mask. It was the Commission’s hope that the availability of narrower band equipment would facilitate the transition to 12.5 kHz and eventually to 6.25 kHz channels.

One problem with the Commission’s plan is that other than eventually creating more channels, users of the PLMR bands enjoy no inherent advantages in going to a narrower bandwidth system and thus, are not motivated to do so. In fact, the transition from 25 kHz to 12.5 kHz channel operation causes a reduction in audio quality, not to mention the cost of purchasing new equipment. It has been eight years since the Commission required the authorization of 12.5 kHz equipment and the transition to 12.5 kHz channels has been anything but successful. In order to accelerate the transition, the Commission has had to issue a

Report and Order mandating changeover dates. However, even the dates in that order have had to be postponed due to complaints from users and user groups.

### **Equipment to Support 6.25 kHz Channels is Not Cost Effective**

The analog frequency modulation system used on the PLMR bands provides good performance with technology which is fairly inexpensive and easy to implement. When the Commission mandated that new equipment authorizations had to include provisions for 12.5 kHz operation some design changes were necessary to support the narrower bandwidth. The overall impact on the manufacturers has been fairly minimal. In fact, the greatest impact is supporting both 12.5 kHz and 25 kHz operation simultaneously during the transition period. This latter point is significant since the transition period from 25 kHz to 12.5 kHz has still not been completed eight years after the Commission's mandate. Fortunately, radios which only support 12.5 kHz operation are somewhat compatible with 25 kHz equipment although the audio quality and depth of modulation suffer.

The situation with 6.25 kHz equipment is completely different. Efforts to simply reduce transmitter deviation are only successful if the audio bandwidth is reduced as well. The result is a signal which is virtually unusable for the transmission of voice. This implies that a move to digital technology will be required. This technology will require digitization of the voice signal, compression and coding, and advanced modulation techniques on the transmitting end as well as linear IF stages, decoding, decompression, and conversion to analog on the receiving end. This will almost certainly require DSP based equipment along with a linear and thus, less efficient RF power amplifier. While this is definitely within the current state of the art, such equipment tends to be expensive, physically large and have limited battery life compared with current 12.5 and 25 kHz offerings. It is reasonable to expect that the technology to support 6.25 kHz operation will eventually become more cost effective as production quantities grow and the technology improves. In the meantime, however, all manufacturers and buyers of PLMR equipment will be encumbered with costly technology for which they have little use, at least for quite some time. If the transition from 25 kHz to 12.5 kHz operation is any guide, this encumbrance will exist for quite a few years and the industry will suffer as a result. Even the one segment of the industry which has begun a transition to digital, public safety, has embraced a standard (APCO Project 25, Phase I) which does not support 6.25 kHz operation.

### **No Standards for 6.25 kHz Operation Exist**

The majority of the analog FM equipment currently operating on the PLMR bands is compatible with each other, even within a mix of product from different manufacturers. Even 12.5 kHz and 25 kHz equipment are somewhat compatible with each other. But at present, no standards to support 6.25 kHz equipment exist. Ritron is not advocating that the Commission establish a standard for 6.25 kHz, but rather allow the marketplace itself to do so. Within the public safety arena standards are currently being developed that would offer equivalent channel efficiencies as two voice channels in one 12.5 kHz channel. Others have proposed alternate systems which should also meet the Commissions spectrum efficiency requirements. The manufacturers and users will be reluctant enough to spend valuable resources and capital on what promises to be relatively expensive 6.25 kHz equipment. That reluctance is sure to only increase if that equipment works only on proprietary systems. This would be especially significant in the Industrial/Business sector which tends to very cost sensitive.

### **Implementation of Section 90.203(j)(5) Should be Delayed Until the Following:**

- 1) A real need has been established for PLMR frequencies beyond those created by the transition to 12.5 kHz channels. Going to 6.25 kHz channels simply to encourage new spectrum efficient technologies is not prudent. Given the negative impact to both the manufacturers and the users of 6.25 kHz compliant equipment, a real marketplace need should be established. Waiting until the transition to 12.5 kHz channels has been completed to assess the need for 6.25 kHz channels is recommended.
- 2) Technology exists which will allow the transition to occur in such a way that the benefits of the change to 6.25 kHz channels outweigh the associated R&D, manufacturing, and product costs.
- 3) The marketplace has established technological standards for the 6.25 kHz equipment.

We trust that the Commission will find these points compelling and delay implementation of Section 90.203(j)(5).

Respectfully submitted,

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President  
Ritron, Inc.